sdmay19-32: Sound Effect Devices for Musicians

Week 3 Report

February 7 – February 14

Advisors: Dr. Geiger & Dr. Chen

Team Members

Tim Day — *Analog Engineer*
Eric Fischer — *Test Engineer*
Francisco Alegria — *Chief/ Musical Engineer*
Blake Beyer — *Digital Engineer*
Travis Gillham — *Integration Engineer*

Summary of Progress this Report

This week a demonstration was shown of each one of the modules to Dr. Geiger and Dr. Chen. They gave the recommendations that the output amplifier should be replaced with a power amplifier. The filters should have had a better testing, because there was signs of bad data entry. The mixer puts the output at a constant Vpp and this can be improved upon by looking at the power inputs and remaining a constant power output. The oscillators work for sweeping the output with a voltage source input. The biggest steps that need to be worked on next is the ADSR code and the WiFi interface.

Pending Issues

- Need to finish testing the mixer, noise, amplifier, filters, oscillators, and low frequency oscillators.
- Half the group needs to learn how to use the digi-pods.
- Need to finish code for ADSR.
- Need to make working algorithm for the mixer and filters.

Plans for Upcoming Reporting Period

- Code should be done or majority of the way worked through for all of the modules.
- Testing the hardware should be complete.
- Finish WiFi debug. Port Arduino Uno code to mega.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Tim Day	Assembled the mixer circuit. Finished the code for the mixer algorithm. Learned how to communicate with multiple devices i2C. Debugged the system. Tested the circuit to ensure that the output was 2.5 Vpp for two oscillator inputs. Tested the digipods to see the error and if there is a mid-point for changing values.	16	31
Eric Fischer	Tested both low pass and high pass and confirmed they are functioning as expected. This meaning both filters have a low corner frequency of 20 Hz and a high corner frequency of 20,000 Hz, which is what we wanted. Working on algorithm.	14.5	27.5
Francisco Alegria	Continued debugging, limited progress. Still determining error which is corrupting the data being transferred.	3	16
Blake Beyer	Finished oscillator. Finished attenuators. Tuned oscillator. Tested oscillator by visually inspecting output waveforms and comparing audio to function generator. Started LFO. Helped Eric test high pass filters. Helped Travis test output amp.	16	29.5
Travis Gillham	Helped Eric out with testing some the filter and figuring out a resistance value that was needed. Tested the amplifier circuit, works with speakers but with headphones the sine wave got thicker on the top.	5.5	19